

12138160 SULTAN RIVER BELOW POWERPLANT, NEAR SULTAN, WA

LOCATION.--Lat 47°54'27", long 121°48'51", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.17, T.28 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on left bank, just downstream from Henry M. Jackson powerplant, 3.2 mi north of Sultan, and at mile 4.5.

DRAINAGE AREA.--94.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 267.0 ft above NGVD of 1929 (levels by Snohomish County Public Utility District). Prior to Oct. 1, 1991, at site on right bank, 100 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated at Spada Lake (station 12137300) since April 5, 1965. Since May 1984, water is diverted from Spada Lake through a 14 ft diameter, 4 mile long tunnel and a 10 ft diameter, 4 mi long pipeline for power production and returned to the river upstream from the station, at the powerplant. Since July 1984, an undetermined flow was returned to river at upstream diversion dam by pipeline from Lake Chaplain for instream flow requirement. Some flows diverted into Lake Chaplain from municipal use by City of Everett. U.S. Geological survey satellite telemeter at station.

AVERAGE DISCHARGE.--22 years (water years 1984-2005), 735 ft³/s, 532,600 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,300 ft³/s, Nov. 24, 1990, gage height, 15.03 ft, from rating curve extended above 4,500 ft³/s; minimum discharge, 124 ft³/s, July 14, 15, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,680 ft³/s, Dec. 11, gage height, 8.25 ft; minimum discharge, 167 ft³/s, Aug. 15, 16.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	555	1,280	1,540	672	1,420	391	393	464	393	323	286	413
2	555	1,670	1,250	676	1,280	364	373	463	377	299	285	412
3	553	1,420	971	673	1,030	362	369	465	368	298	300	409
4	552	1,320	963	672	807	376	346	465	364	296	310	408
5	552	1,290	1,000	672	721	376	317	443	367	296	299	408
6	554	1,270	990	631	705	370	312	400	375	297	285	410
7	550	1,270	1,310	499	796	374	319	384	368	294	285	410
8	569	1,260	1,570	414	834	361	338	380	413	301	284	395
9	597	1,250	1,520	415	842	360	320	383	439	292	284	390
10	602	1,040	1,900	414	835	359	312	412	423	283	282	405
11	586	875	2,160	566	614	361	319	404	433	282	282	393
12	572	873	1,540	735	509	359	311	401	433	281	283	389
13	574	874	1,530	657	520	361	309	399	424	283	284	342
14	575	869	1,600	409	456	365	312	385	452	280	237	288
15	570	726	1,660	368	403	363	311	391	477	278	172	295
16	592	600	1,580	442	398	365	420	449	392	284	171	289
17	645	590	1,550	650	374	371	432	467	335	283	174	288
18	1,250	567	1,530	1,810	359	367	444	470	329	287	208	288
19	1,590	559	1,520	1,740	359	368	406	498	323	291	232	288
20	1,610	560	1,530	1,610	360	383	415	486	319	292	231	288
21	1,580	551	1,510	1,600	366	391	446	456	315	290	231	290
22	1,470	550	1,430	1,590	362	373	456	447	328	291	231	305
23	1,490	500	1,400	1,590	361	360	448	461	336	290	236	311
24	1,460	1,130	1,390	1,580	357	350	444	437	330	288	362	311
25	1,450	1,440	1,390	1,570	358	348	417	415	327	288	378	311
26	1,440	896	1,400	1,560	354	360	397	411	325	288	320	319
27	1,420	811	1,470	1,550	354	438	433	485	329	288	337	324
28	1,400	786	1,510	1,540	354	451	471	365	330	288	374	324
29	1,340	1,080	1,240	1,540	---	428	466	353	332	287	337	350
30	1,300	1,440	838	1,540	---	424	465	352	329	288	301	488
31	1,310	---	682	1,470	---	377	---	362	---	287	362	---
TOTAL	29,863	29,347	43,474	31,855	16,488	11,656	11,521	13,153	11,085	8,993	8,643	10,541
MEAN	963	978	1,402	1,028	589	376	384	424	370	290	279	351
MAX	1,610	1,670	2,160	1,810	1,420	451	471	498	477	323	378	488
MIN	550	500	682	368	354	348	309	352	315	278	171	288
AC-FT	59,230	58,210	86,230	63,180	32,700	23,120	22,850	26,090	21,990	17,840	17,140	20,910

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2005, BY WATER YEAR (WY)

	MEAN	640	1,296	1,075	1,023	881	733	720	752	693	416	265	345
MAX	1,630	3,080	1,787	1,766	1,586	1,223	1,284	1,257	1,314	925	833	635	
(WY)	(1998)	(1991)	(1996)	(1999)	(1996)	(1997)	(1988)	(1984)	(1999)	(1997)	(1999)	(1995)	
MIN	227	246	261	396	310	335	276	305	256	198	167	203	
(WY)	(1984)	(1988)	(1986)	(2001)	(1985)	(2001)	(1992)	(1995)	(1992)	(1987)	(1985)	(1985)	

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SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1984 - 2005	
ANNUAL TOTAL	261,371		226,619			
ANNUAL MEAN	714		621		735	
HIGHEST ANNUAL MEAN					1,065	1997
LOWEST ANNUAL MEAN					464	2001
HIGHEST DAILY MEAN	2,680	Jan 29	2,160	Dec 11	20,100	Nov 24, 1990
LOWEST DAILY MEAN	233	Aug 3	171	Aug 16	157	Aug 24, 1985
ANNUAL SEVEN-DAY MINIMUM	237	Aug 12	203	Aug 15	157	Aug 23, 1985
ANNUAL RUNOFF (AC-FT)	518,400		449,500		532,600	
10 PERCENT EXCEEDS	1,510		1,470		1,550	
50 PERCENT EXCEEDS	552		410		500	
90 PERCENT EXCEEDS	258		288		215	

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WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1984 to current year.

INSTRUMENTATION.--Temperature recorder since June 1984.

REMARKS.--Record excellent May 25-Sept. 30. Interruptions in record due to malfunction of the recording instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 17.5°C (rounded), Sept. 5-7, 1986; minimum, 1.0°C (rounded), Feb. 2-5, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.5°C, Aug. 15; minimum, occurred during period of missing data.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

[illegible]

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	10.6	8.2	9.3
26	---	---	---	---	---	---	---	---	---	11.0	8.4	9.6
27	---	---	---	---	---	---	---	---	---	10.1	8.3	9.5
28	---	---	---	---	---	---	---	---	---	11.3	9.4	10.3
29	---	---	---	---	---	---	---	---	---	9.9	9.0	9.6
30	---	---	---	---	---	---	---	---	---	9.3	8.8	9.0
31	---	---	---	---	---	---	---	---	---	9.4	8.7	9.0
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.8	9.2	9.5	10.7	10.1	10.4	12.5	11.2	11.8	14.2	13.4	13.8
2	9.7	9.1	9.4	10.9	9.7	10.3	12.0	11.1	11.6	14.4	13.6	13.9
3	9.2	8.8	9.0	11.0	9.7	10.3	12.2	11.0	11.7	14.1	13.4	13.8
4	9.5	8.8	9.0	11.0	10.5	10.7	12.5	11.3	12.0	13.9	13.5	13.7
5	9.3	8.8	9.0	11.2	10.2	10.7	12.7	11.5	12.2	14.0	13.5	13.7
6	9.2	8.7	9.0	11.5	10.1	10.8	12.8	11.7	12.3	14.2	12.1	13.3
7	9.2	8.8	9.0	11.2	10.1	10.8	12.8	11.7	12.4	13.2	12.1	12.5
8	9.6	8.8	9.2	11.4	10.0	10.6	12.9	11.8	12.5	13.0	12.0	12.5
9	10.6	9.1	9.7	11.2	10.2	10.8	13.0	11.8	12.5	13.3	12.1	12.6
10	9.8	9.1	9.5	11.0	10.2	10.6	13.0	11.9	12.3	13.1	12.0	12.5
11	9.8	9.1	9.5	11.1	10.2	10.8	12.3	11.9	12.1	12.9	12.3	12.6
12	10.0	9.0	9.4	11.2	10.6	10.9	12.7	11.8	12.2	13.0	12.4	12.7
13	10.1	9.1	9.6	11.2	10.3	10.8	13.2	12.0	12.6	13.2	12.4	12.7
14	9.9	9.1	9.4	11.6	10.4	10.9	14.3	12.4	13.2	13.3	12.6	12.9
15	10.4	9.2	9.7	11.7	10.5	11.0	14.5	12.8	13.5	13.4	12.5	13.0
16	10.2	9.1	9.5	11.4	10.4	10.9	13.4	12.8	13.0	13.0	12.6	12.8
17	10.6	9.6	10.1	11.8	10.7	11.2	13.5	12.3	12.8	13.2	12.6	12.8
18	10.2	9.8	10	12.0	11.1	11.6	13.8	12.3	12.9	13.6	12.4	12.9
19	10.8	9.6	10.1	12.0	11.3	11.6	13.8	12.5	13.1	13.6	12.6	13.0
20	11.3	10.2	10.5	12.1	10.9	11.6	14.0	12.7	13.3	13.7	12.7	13.0
21	10.9	9.9	10.5	12.2	10.8	11.6	14.0	12.8	13.4	13.4	12.2	12.8
22	10.8	9.5	10.1	11.6	10.8	11.2	13.8	12.8	13.3	13.2	12.1	12.7
23	10.8	9.5	10.1	11.7	10.7	11.1	13.6	12.7	13.0	13.4	12.0	12.7
24	10.7	9.9	10.3	11.6	10.7	11.3	13.5	12.4	12.9	13.5	12.0	12.7
25	10.9	9.7	10.3	11.9	10.8	11.4	13.8	12.8	13.4	13.5	12.1	12.8
26	10.2	9.4	9.9	12.0	10.8	11.5	13.9	13.1	13.6	13.7	12.4	13.0
27	10.1	9.4	9.8	12.1	11.0	11.6	14.3	13.2	13.6	13.6	12.6	13.0
28	10.0	9.4	9.7	12.2	11.1	11.7	14.3	13.3	13.8	13.8	12.5	13.1
29	10.5	9.6	10.1	12.5	11.1	11.8	14.0	13.4	13.7	13.4	12.6	13.1
30	10.7	10.1	10.4	12.2	11.1	11.8	13.8	13.4	13.6	12.7	11.3	12.1
31	---	---	---	12.3	11.1	11.8	14.2	13.3	13.7	---	---	---
MONTH	11.3	8.7	9.7	12.5	9.7	11.1	14.5	11.0	12.8	14.4	11.3	13.0
YEAR	14.5	8.2	11.5									